

SCH4U

# *Unit Test*

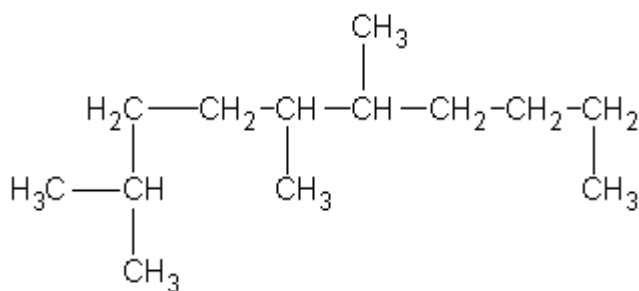
## *Organic Chemistry*

NAME: \_\_\_\_\_

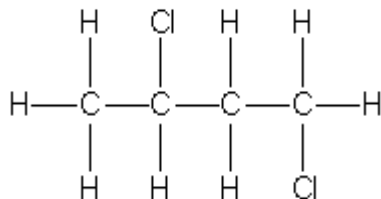
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**Part A- True/False (10 marks)**

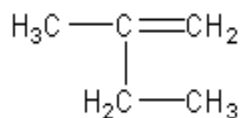
1.  $\text{CH}_4$  has a *lower* melting point than  $\text{CH}_3\text{OH}$ .
2. Carbon-carbon double and triple bonds are *less reactive* than carbon-carbon single bonds
3. The correct IUPAC name for the structure below is *5,6,9-trimethyldecane*.



4. The correct IUPAC name for the structure below is *1,3-dichlorobutane*.



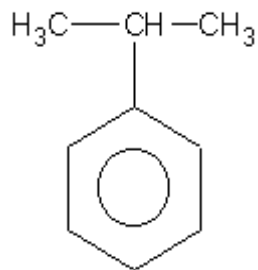
5. The correct name for the compound below is 2-ethyl-1-propene.



6. Carbon-carbon double and triple bonds are more *reactive* than carbon-carbon single bonds.
7. A *polar* molecule has low Van der Waal forces and a low boiling point.

8. Benzene is generally more reactive than alkanes and less reactive than alkenes because of the bonding in its aliphatic ring.

9. The following structure can be named *2-phenylpropane* or *isopropylbenzene*.



10. Alkanes are *highly reactive* and combustible.

**Part B- Structural Formulas (10 marks)**

1. Draw a structural diagram for each hydrocarbon listed below.

(a) 4-methyl-2-hexyne

(b) 3-phenyl-4-propyl-2-heptene

(c) 2, 4-dimethyl-1,3,5-hexatriene

(d) 2-methyl-4-isopropylnonane

(e) 1-ethyl-2-methylcyclohexane

(f) 2-aminoethanoic acid

(g) 2-pentanone

(h) propyl benzoate

(i) 1,3-dimethylbenzene

(j) 3,4-diethylcyclohexene

***Part C- Hydrocarbon Reactions (10 marks)***  
**Illustrate the reactions as described below.**

(i) The combustion of octane

(ii) The reaction of propane with hydrogen chloride

(iii) The hydrogenation of 2-butyne

(iv) The reaction of 3-ethyl-1-pentene with water

(v) Bromine combines with benzene

**Part D Short Answers**

1. Explain which compound in each of the following pairs will have the **higher boiling point**. (2 marks)

(a) methane or octane

(b) methanol or methanoic acid

2. Explain which compound in each of the following pairs will have the **higher solubility in water**. (2 marks)

(a) methane or octane

(b) ethane or ethanol

3. Draw the structural diagrams illustrating the molecules indicated below. (3 marks)

(a) a primary, secondary, and tertiary amine with the formula  $C_5H_{13}N$

(b) three ketones with the molecular formula  $C_5H_{10}O$

4. Design a procedure to synthesize **propanone**, starting with **propane**. Illustrate the necessary reactions. (4 marks)